

WE CLAIM:

1. A method for suppressing or reducing the immune response of a mammal to an antigen comprising orally or enterally administering to the mammal an effective
5 immunosuppressive dose of a plant material derived from a plant transformant capable of producing said antigen or an immunosuppressive fragment or derivative thereof.
2. A method in accordance with claim 1 wherein the
10 antigen is a human Major Histocompatibility Complex class II protein.
3. A method in accordance with claim 1 wherein the antigen is a human Major Histocompatibility Complex class
15 II α chain.
4. A method in accordance with claim 1 wherein the antigen is a human Major Histocompatibility Complex class
20 II β chain.
5. A method in accordance with claim 1 wherein the antigen is an autoantigen.
6. A method in accordance with claim 1 wherein the
25 antigen is human glutamic acid decarboxylase.
7. A method on accordance with claim 5 wherein the autoantigen is involved in the pathogenesis of a disease selected from the group consisting of Type I diabetes
30 mellitus, lupus erythematosus, thyroiditis, multiple sclerosis, uveitis and Crohn's disease.
8. A method in accordance with any of the preceding claims wherein the plant is transformed with a vector in
35 accordance with claim 17.

9. A method in accordance with any of the preceding claims wherein the plant is selected from the group consisting of potato, tomato, alfalfa and canola.
- 5 10. A method for suppressing the rejection of engrafted donor tissue by a recipient mammal comprising orally or enterally administering to the mammal an effective immunosuppressive dose of a plant material derived from a plant transformant capable of producing a transplantation
10 antigen or an immunosuppressive fragment or derivative of said antigen.
11. A method in accordance with claim 10 wherein the antigen is a human Major Histocompatibility Complex
15 protein or an α or β chain thereof.
12. A method in accordance with any of claims 10 to 11 wherein the plant is transformed with a vector in
20 accordance with claim 17.
13. A method in accordance with any of the preceding claims wherein the plant material is selected from the group consisting of plant parts, an extract of total plant protein, a partially purified plant protein
25 preparation and a purified plant protein preparation.
14. A pharmaceutical composition for suppressing or reducing the immune response of a mammal to an antigen comprising an oral or enteral dosage form comprising an
30 effective dose of a plant material derived from a plant transformant capable of producing said antigen or an immunosuppressive fragment or derivative thereof and a pharmaceutically acceptable carrier.
- 35 15. A pharmaceutical composition for suppressing the rejection of engrafted donor tissue by a recipient mammal comprising an oral or enteral dosage form comprising an

effective dose of a plant material derived from a plant transformant capable of producing a transplantation antigen or an immunosuppressive fragment or derivative of said antigen and a pharmaceutically acceptable carrier.

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16. A pharmaceutical composition in accordance with claim 15 wherein the antigen is a human Major Histocompatibility Complex Class II α chain or β chain polypeptide or immunosuppressive fragment or derivative thereof.

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17. A recombinant vector for transformation of a plant host comprising a plant promoter sequence operably linked to a DNA sequence encoding a heterologous polypeptide and a suitable termination sequence in proper reading frame with said DNA sequence.

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18. A recombinant vector in accordance with claim 17 wherein the heterologous polypeptide is a mammalian protein.

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19. A recombinant vector in accordance with claim 18 wherein the promoter sequence is the Cauliflower Mosaic Virus 35S promoter, the DNA sequence encodes a human Major Histocompatibility Complex Class II α chain polypeptide or β chain polypeptide and the termination sequence is a nopaline synthase sequence.

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20. A process for producing a human Major Histocompatibility Complex Class II α chain or β chain polypeptide in a plant comprising transforming a plant with the recombinant vector of claim 19 and expressing the heterologous polypeptide encoded therein.

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21. A recombinant vector in accordance with claim 18 wherein the promoter sequence is the Cauliflower Mosaic Virus 35S promoter, the DNA sequence encodes human

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glutamic acid decarboxylase and the termination sequence is a nopaline synthase sequence.

22. A process for producing human glutamic acid
5 decarboxylase in a plant comprising transforming a plant with the recombinant vector of claim 21 and expressing the heterologous polypeptide encoded therein.
23. A recombinant vector in accordance with claim 18
10 wherein the mammalian signal-peptide encoding portion of said DNA sequence is replaced by a DNA sequence encoding a plant signal sequence.
24. A transgenic plant transfected with the recombinant
15 vector of any of claims 17 to 19, 21 or 23.
25. A method in accordance with claim 1 wherein the antigen is a mouse Major Histocompatibility Complex class II protein or an α or β chain thereof.